Docket No. 2001-054-SFT

CLAIMS:

What is claimed is:

1   1.   A data management appliance, comprising:

2   a random-access storage unit; and

3   control circuitry adapted to receive commands from a

4   host computer system,

5   wherein in response to the control circuitry

6   receiving a write command from the computer system, the

7   control circuitry updates the random-access storage unit

8   to include information associated with the write command

9   and

10   in response to a read command including a logical

11   address and a time value, the control circuitry

12   retrieves, from the random-access storage unit, data

13   representing contents of the logical address at a time

14   represented by time value.

1   2.   The data management appliance of claim 1, wherein

2   the write commands are replicated from write commands

3   issued to a primary storage device.

1   3.   The data management appliance of claim 1, wherein

2   the write commands are received from the computer system

3   through a replicating controller.

1   4.   The data management appliance of claim 1, wherein

2   the write commands are replicated by the computer system.

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1   5.   The data management appliance of claim 1, wherein
2   the random-access storage unit stores a forward journal.

1   6.   The data management appliance of claim 1, wherein
2   the random-access storage unit stores a mirror-in-the-
3   middle (MIM) containing a copy of contents of a primary
4   storage device at a fixed point in time.

1   7.   The data management appliance of claim 6, wherein
2   the random-access storage unit stores at least one
3   snapshot containing changes, that when made to contents
4   of the mirror-in-the-middle (MIM), would result in a
5   previous version of the contents of the primary storage
6   device.

1   8.   The data management appliance of claim 7, wherein
2   the control circuitry stores a mapping object, wherein
3   the mapping object maps logical addresses into physical
4   addresses on the mirror-in-the-middle (MIM) and contained
5   in the at least one snapshot.

1   9.   The data management appliance of claim 1, wherein
2   the control circuitry receives commands from the computer
3   system through a storage network.

1   10.   The data management appliance of claim 1, wherein
2   the random-access storage unit includes memory.

1   11.   The data management appliance of claim 1, wherein
2   the random-access storage unit includes a disk.

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1   12.   A data management appliance, comprising:

2   a random-access storage unit; and

3   control circuitry adapted to receive commands from a

4   computer system,

5   wherein in response to the control circuitry

6   receiving a write command from the computer system, the

7   control circuitry updates the random-access storage unit

8   to include information associated with the write command;

9   in response to a mount command including a time

10   value, the control circuitry configures itself to perform

11   future read operations with respect to a fixed time

12   represented by the time value; and

13   in response to a read command including a logical

14   address, the control circuitry retrieves, from the

15   random-access storage unit, data representing contents of

16   the logical address at the fixed time.

1   13.   The data management appliance of claim 12, wherein

2   the write commands are replicated from write commands

3   issued to a primary storage device.

1   14.   The data management appliance of claim 12, wherein

2   the write commands are received from the computer system

3   through a replicating controller.

1   15.   The data management appliance of claim 12, wherein

2   the write commands are replicated by the computer

3   system.

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1 16.   The data management appliance of claim 12, wherein
2 the random-access storage unit stores a forward journal.

1 17.   The data management appliance of claim 12, wherein
2 the random-access storage unit stores a mirror-in-the-
3 middle (MIM) containing a copy of contents of a primary
4 storage device at a fixed point in time.

1 18.   The data management appliance of claim 17, wherein
2 the random-access storage unit stores at least one
3 snapshot containing changes, that when made to contents
4 of the mirror-in-the-middle (MIM), would result in a
5 previous version of the contents of the primary storage
6 device.

1 19.   The data management appliance of claim 18, wherein
2 the control circuitry stores a mapping object, wherein
3 the mapping object maps logical addresses into physical
4 addresses on the mirror-in-the-middle (MIM) and
5 contained in the at least one snapshot.

1 20.   The data management appliance of claim 12, wherein
2 the control circuitry receives commands from the
3 computer system through a storage network.

1 21.   The data management appliance of claim 12, wherein
2 the random-access storage unit includes memory.

1 22.   The data management appliance of claim 12, wherein
2 the random-access storage unit includes a disk.